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ABSTRACT

The 25th anniversary of Earth Day is 1995. This issue highlights useful, high quality educational materials and other resources that can be used to discuss environmental issues in the classroom. Activities, resources, and teaching materials in this Earth Day issue include: ATLAS 1: Studying Mysteries in the Earth's Atmosphere; Completing the Cycle--It's Up to You; Earth Day Every Day; Ecosystems; The Environment: The Science and Politics of Saving Our Planet; Environmental Energy; Fish Banks, Ltd; The Greenhouse Effect; Grow Your Own Tree; Keepers of the Earth; The Lake Game for Youth; Race to Save the Planet: Level 1 Videodisc; Relationships of Living Things; Resources; Science in the Trees, Please; Splish Splash; Test Tube Zoo; Threatened and Endangered Animals; Water Precious Water (AIMS); and What's Under Your Feet. Contains 15 selected readings, 8 selected Internet resources, and 9 federal projects and resources for Earth Day educators. (MKR)

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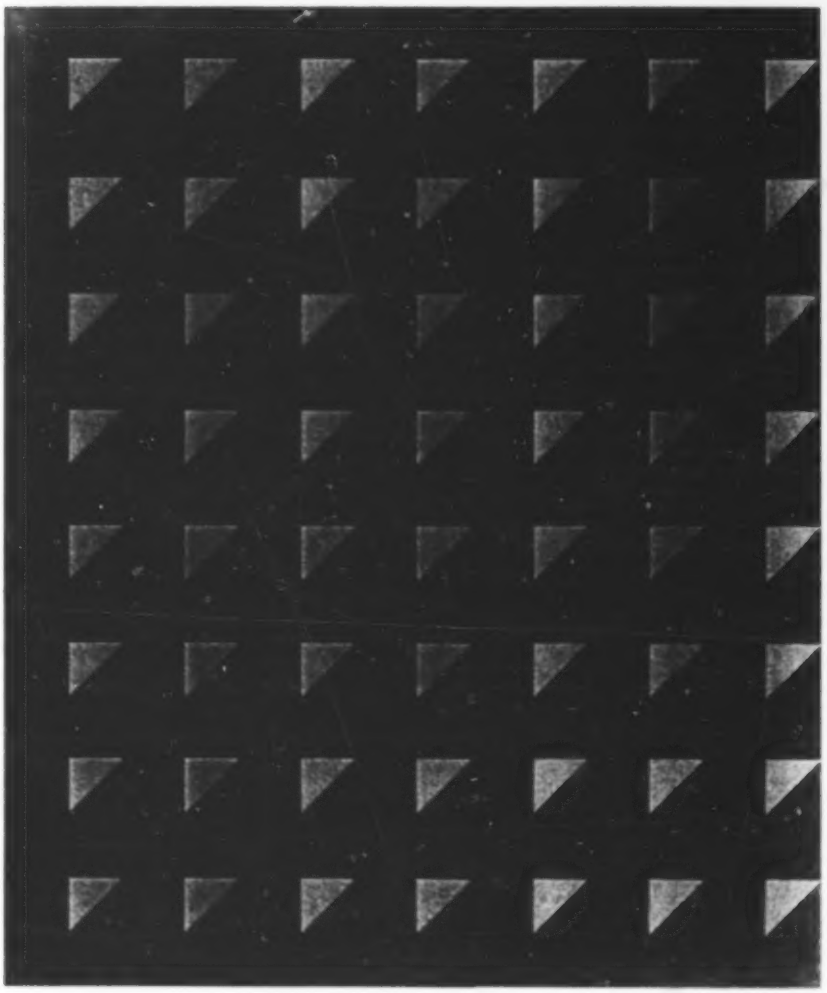
EISENHOWER NATIONAL CLEARINGHOUSE for MATHEMATICS AND SCIENCE EDUCATION

ENC FOCUS

Issue 2, 1994-95

Earth Day in the Classroom: Mathematics and Science Materials and Resources for Teachers



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Each publication in the *ENC Focus* series presents a small selection of the Clearinghouse collection focused on a topic of particular interest to mathematics and science teachers. Issues of *ENC Focus* are published several times each year and are available in both print and electronic formats. Fifteen to twenty catalog records describing curriculum materials and supplementary resources are included, accompanied by a bibliography listing relevant readings, a selection of Internet resources, and descriptions of relevant Federal groups and agencies.

In addition to meeting general requirements for inclusion in the ENC collection, curriculum materials in these publications are: appropriate to the specific topic of the issue; supportive of hands-on, active, inquiry-based methods of instruction; and readily available. The publication contains a cross-section of materials in different media or formats and at various grade levels. Indicators of usefulness or other evaluative information, when available, are included in the catalog record.

Ordering and price information are provided, so that teachers can easily obtain materials that seem useful. The Eisenhower National Clearinghouse Resource Center and the Regional Consortia listed on the back cover are additional sources for information on the topics profiled in this series.

How to Connect to ENC's Online Services

Educators with an interest in *Focus* topics will find other resources in the online *Catalog of Curriculum Resources*. New records are being added to ENC's catalog daily, so teachers who enjoyed an issue of *Focus* should consult the catalog for newly cataloged resources on the same topics. Also, ENC's Gopher site provides additional resources and links to other mathematics and science education sites. The electronic versions of *Focus* can also be found at the Gopher site.

To connect to ENC via the Internet, telnet to **enc.org**; via modem dial (800) 362–4448 or (614) 292–9040. Set your communication software to **VT100 terminal emulation, No parity, 8 data bits, 1 stop bit, and full duplex.** Once the connection is achieved, press <RETURN> to bring up a screen and type **c** to connect. All the information you need to use *ENC Online* is on the screen.

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Richard W. Riley *Secretary*	Sharon P. Robinson *Assistant Secretary*	Eve M. Bither *Acting Director*

ENC FOCUS: Earth Day in the Classroom

ENC Focus Staff

Editor: Tracy Crow
Associate Editors: John Monk, Karen Plummer
Graphic Design Consultant: Marla Mayerson
Reference Assistance: Cindy Kristof, Michele McNeal

Layout and production assistance provided by Aspen Systems Corporation.

Address comments to:
ENC Focus Editor
Eisenhower National Clearinghouse
1929 Kenny Road
Columbus, OH 43210–1079
Telephone no.: (614) 292–7784
E-mail: focuseditor@enc.org

Contact ENC for general information at the address and phone number above, or e-mail to info@enc.org. For help with our online services, call our technical help desk at (614) 292–9590 or e-mail to help@enc.org.

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About *ENC Focus*

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Earth Day in the Classroom

On April 22, 1970, teachers and students throughout the country participated in the first Earth Day. This grassroots nationwide event was seen as an opportunity to heighten public awareness of environmental concerns and to educate Americans about the current health of the U.S. environment.

Earth Day 1970 was truly a birthday in many ways. Later in 1970, Congress established the Environmental Protection Agency. Conservation efforts and environmental awareness grew during the 1970's and 1980's. That first Earth Day signaled the entry of environmental science into the classroom as teachers throughout the country participated in Earth Day. However, during the 70's and 80's, the Earth Day anniversaries passed without the excitement and fascination of the first. Only in recent years has Earth Day again sparked our imaginations, focusing our attention on progress in addressing environmental issues in the classroom and in everyday life.

Earth Day 1995

This year, 1995, will be the 25th anniversary of Earth Day. The intent of this issue of *ENC Focus* is to offer a sampling of useful, high quality educational materials and other resources that can be used to highlight environmental issues in the classroom. The Eisenhower National Clearinghouse for Mathematics and Science Education (ENC) has worked with the National Science and Technology Council and the Eisenhower National Clearinghouse Mathematics and Science Advisory Boards to identify materials that will assist teachers in incorporating environmentally oriented activities in their classrooms and help students understand and appreciate Earth Day.

Because environmental science covers so many subtopics, this *Focus* contains different types of resources from a wide variety of resource producers. The Environmental Protection Agency produces educational materials about everything from groundwater to ozone depletion. The National Aeronautics and Space Administration (NASA) runs several projects that monitor the environment, particularly the Earth's atmosphere. Earth Day resources could also address the use of different forms of energy and natural resources or how different communities handle local environmental problems. Several animals are affected by changes in the environment, so endangered and extinct species are other topics to explore on Earth Day.

This catalog is organized alphabetically by title. Each page in the main section of the catalog provides an abstract of a particular resource you may wish to explore. At the top of the page, you will see the suggested grade level for that resource highlighted. Ordering and price information is also near the top of each page, as are the subject identifiers. At the bottom of each page, you will find listings of materials related to the main item, including materials from the same series or items that are the same resource type, such as videos or software. The chart on the following page displays features of the resources for which abstracts are provided.

Search Strategies

Resources were selected from ENC's *Catalog of Curriculum Resources*. If you have access to our online services (see *How to Connect to ENC's Online Services* in the Preface), you may use some of the same searching techniques we used to assemble this catalog. You can search the ENC *Catalog* in different ways using a variety of fields, from cost to grade level to subject matter to author.

We selected our related resources for each page by looking for particular keywords and by limiting searches. We began our searches with the broadest possible terms and then moved to more specific environmental terms. Because not everything that is useful for Earth Day will have the term *environment* in its subject headings, we searched with terms as varied as *ecology*, *recycling*, *greenhouse effect*, *pollution*, *conservation*, *extinction*, *ecosystems*, and *natural resources*. Some of these terms are much more specific than others.

Limiting searches is another easy way to find resources that are useful for your classroom. For example, one of our featured resources in this *Focus* was developed for high school classrooms; we chose to highlight other resources for grades 9–12 on the same page. Therefore, once we had an initial set of environmental materials, we limited our search by grade level. Another useful way to limit a search is by cost, as we did with one of the free resources in this *Focus*.

This catalog can only cover a small portion of the materials collected by ENC that may be useful in preparing for Earth Day and for teaching about the environment. If you get the chance, explore the possibilities available to you through ENC's Online, Gopher, and World Wide Web services.

Overview of Contents
Earth Day in the Classroom

Title	Grades K–3	Grades 4–8	Grades 9–12	Science	Interdisciplinary	Free	1–10 Dollars	11–25 Dollars	26+ Dollars	Activities	Teaching Units	Supplementary Materials
ATLAS 1: Studying Mysteries in the Earth's Atmosphere		X		X			X					X
Completing the Cycle—It's Up to You		X			X		X			X		
Earth Day Every Day	X	X	X		X	X				X		
Ecosystems		X		X					X		X	
The Environment: The Science and Politics of Saving Our Planet		X	X		X				X		X	
Environmental Energy		X		X					X		X	
Fish Banks, Ltd.			X		X				X	X		
The Greenhouse Effect		X	X	X					X			X
Grow Your Own Tree	X			X		X				X		
Keepers of the Earth	X	X			X			X		X		
The Lake Game for Youth	X	X	X		X	X				X		
Race to Save the Planet: Level I Videodisc		X	X		X				X		X	
Relationships of Living Things	X			X					X		X	
Resources		X	X	X			X	X			X	
Science in the Trees, Please		X		X				X		X		
Splish Splash	X				X		X			X		
Test Tube Zoo		X	X	X					X		X	
Threatened and Endangered Animals		X		X					X		X	
Water Precious Water (AIMS)	X	X			X			X			X	
What's Under Your Feet	X	X		X		X				X		

ATLAS 1:
Studying Mysteries in the Earth's Atmosphere

Grades 6–8
Supplementary Materials

NASA CORE/
Lorain County JVS
15181 Route 58 South
Oberlin, OH 44074
Telephone no.: (216) 774–1051
FAX no.: (216) 774–2144
1 set: $8.50

Atmosphere; Atmospheric Laboratory for Applications and Science (ATLAS); Atmospheric sciences; Chemistry; Earth science; Environment; Environmental damage; Environmental monitoring; Global warming; Greenhouse effect; Meteorology; Ozone depletion; Physics; Remote sensing; Sciences; Space sciences; Weather.

1993

ENC–001067

Abstract: This set of 20 slides, accompanied by a teacher's guide with activities, focuses on the study of the Earth's atmosphere and complements a middle school curriculum. The slide program and activities are based on the first Atmospheric Laboratory for Applications and Science (ATLAS) mission to study the amount of energy the Sun injects into the Earth's environment, atmospheric chemistry at different altitudes, auroras, and the atmosphere's electrical characteristics. The teacher's guide is designed as a detective story to help students appreciate some of the many questions currently studied by scientists. The students investigate the causes of changes taking place in the Earth's environment such as warming of the climate and thinning of the ozone layer, which involve interactions between the Earth and its oceans, the atmosphere, and the Sun. Each of 14 "cases" includes two hands-on activities. Activity components include materials, procedures, questions, an investigator's notebook (activities that may be reproduced for individual or small-group work and collected in a binder or folder), suggestions for group or individual activities in other areas of study, facts and classroom discussion ideas, and home activities. Answers to questions are provided at the end of each section. The slide program contains space photographs, graphs, and illustrations that can be used with the program script to explore the topics of human impact on the environment, the ATLAS missions, atmospheric science, atmospheric layers, ozone thinning, the Earth's radiation balance, human alteration of the radiation balance, solar flares, solar winds and the Earth's magnetic fields, auroras, ultraviolet light in space, the ATLAS 1 crew, ATLAS 1 activities, and scientific study of the Earth. The script contains several paragraphs of information describing each slide. A brochure explaining the ATLAS 1 mission accompanies the slide program and teacher's guide. (LZ)

Author: Produced by Exxon Corporation for NASA.

NASA develops hundreds of resources about its programs of the past and present. Several are appropriate for Earth Day.

Growing Concerns
This video for grades 10–12 introduces the Landsat satellite as a partial solution to the world's need to survey and monitor agricultural resources. The video examines the relationship between agricultural production and world hunger, and reviews techniques used in commercial forestry and the use of Landsat images to record changes in forest conditions.

The Pollution Solution?
This video for grades 10–12 examines the use of Landsat images to help restore and protect land, air, and sea resources from pollution. Examples include using Landsat images to monitor reclamation of mined lands in the State of Maryland; to detect the industrial cause of increased snowfall on the eastern shore of Lake Michigan, and to map the movement of solid waste dumped off the shores of New York and New Jersey.

Earth's Future Climate
This video for grades 10–12 is part of a series that highlights biology on Earth and in space through a series of interviews with noted scientists. In this episode, Dr. James Kasting of the Ames Research Center discusses the history of Earth's carbon dioxide cycle and its relation to the greenhouse effect. Kasting examines the possibility that very high atmospheric carbon dioxide levels have occurred during Earth's history.

Completing the Cycle—It's Up to You

Responsibility for the Environment

Grades 4–8

Activities/Book

Indiana Department of Education, Center for School Improvement, School Assistance Unit
Room 229, State House
Indianapolis, IN 46204-2798
Telephone no.: (317) 232-9141
1 text: $3.50

Conservation (Environment); Ecology; Energy conservation; Environmental education; Environmental research; Global warming; Indiana; Natural resources; Pollution; Sciences; Wastes.

1993

ENC–000099

Abstract: This instructional module is the second phase of the "Completing the Cycle" program, an integrated unit in environmental education, which is intended for grades 4–8. These activities are designed to provide students with a variety of concrete ways to study the relationships between behaviors and consequences, and to increase students' awareness of their own abilities to bring about change related to environmental issues such as conservation, preservation, ecology, resource management, solid waste, and recycling. The curriculum guide is divided into five sequential units containing classroom activities deemed appropriate for each grade level. Hands-on activities are based on proficiency skills that correlate with the Indiana Curriculum Proficiency Guide and focus on development of one or more of the following content areas: language arts, social studies, mathematics, science, fine arts, and health. For example, fourth graders investigate how the people, events, and decisions of the past influence the present and future by examining Native Americans, pioneers, and people of today. Fifth graders create a Beauty and the Trash exhibit, in which their trash sculptures are put on display. Sixth graders create Rot Chambers, in which they observe the disintegration of food. Seventh graders write Trash Poetry and establish Trash Pen Pals. Eighth graders gather and record data that allow them to measure air pollution. (WAJ)

Author: Indiana Department of Education, Center for School Improvement and Performance.

The Indiana Department of Education, Center for School Improvement and Performance, produces environmental materials that can be used throughout the country. Below are selected examples.

Completing the Cycle—It's Up to Me: Responsibility for the Environment
This book is an interdisciplinary, integrated unit in environmental education designed for grades K–3. Activities are provided for each grade level based on proficiency skills that correlate with the Indiana Curriculum Proficiency Guide.

The Outdoor Classroom: Experiencing Nature in the Elementary Curriculum
The outdoor classroom is the setting for environmental science activities found in this guide for Indiana teachers of grades K–6. Ten lessons use outdoor education, hands-on learning, field trips, and an interdisciplinary approach to explore the subjects of wildlife, apples, birds, plants, rocks, soil, water communities, trees, water resources, and the weather.

Waste Reduction Guide for Indiana Schools
This guide was designed to help Indiana students in grades K–12 plan, implement, and evaluate a waste reduction program in local schools and communities. Ten steps for starting a school waste reduction program focus on forming planning committees, identifying markets, and promoting and maintaining the program.

Save Our Streams and Waterways
This teacher's guide contains activities and resources necessary for students in grades K–8 to complete a unit of study on local streams and waterways in Indiana. Activities are correlated with state proficiencies and proficiency indicators for the following curricular areas emphasized in the module: art, health, language arts, mathematics, music, science, and social studies.

Earth Day Every Day

Grades K–12
Activities/Book

Office of Water
U. S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Telephone no.: (202) 260–2285
1 text: Free

Conservation; Ecology; Energy conservation; Environmental education; Environmental research; Global warming; Pollution; Recycling; Water cycle.

1993

ENC–000323

Abstract: This is a collection of activities for teaching environmental science (K–12) that can be used to implement emerging state curriculum frameworks. The materials combine different topical aspects of water and integrate them with other subjects such as mathematics, geography, social studies, and English. The activities, projects, and other materials are intended to be introductory or supplemental to an existing course of study. Activities and topics include: the hydrologic cycle, rivers, recycling, characteristics of marine debris, wetlands, drinking water, water supply, trash disposal, air and water pollution, air quality, and collaboration between teachers and professionals in science or technology. The final section is a "survival guide" for teachers that includes teaching tips, career information, a reference list of nine science process skills, and other resources. (WAJ)

Author: U. S. Environmental Protection Agency (EPA).

The EPA, like many Federal agencies, produces a wide range of education resources, and many EPA materials are cataloged by ENC.

Access Express
This reference guide to major EPA contacts was developed as a pocket guide for convenient access to EPA information services throughout the country.

Environmental Education Materials for Teachers and Young People
This annotated compendium of educational materials on environmental issues, compiled by the EPA, contains a collection of citations for organizations engaged in providing environmental education information, materials, and/or opportunities for grades K–12.

Wetlands Education System
Environmental software programs series: Waste water treatment.
Developed by David Johannesen, James Gurganus.
The "Environmental Software Program" series created by the EPA and Purdue University covers six topics: Waste Water Treatment; Drinking Water; Water Conservation; and, under General Education, Water, Agriculture, and Health. The disk concerning wetlands is one program under the topic of General Education—Water. All programs are public domain software and may be copied and distributed (not sold) to other interested users.

The Adventures of Garbage Gremlin: Recycle and Combat a Life of Grime
In this comic book, a garbage loving creature named Garbage Gremlin accompanies a class of students on a tour of a recycling center. On the tour, five steps to recycling (collecting, separating, remaking, marketing, and reusing) are explained.

The Consumer's Handbook for Reducing Solid Waste
This booklet outlines many practical steps to reduce the amount and toxicity of solid waste. The booklet focuses on source reduction, the first option in the EPA's preferred hierarchy of waste management approaches.

Ecosystems

Grade 5
Teaching Units

Carolina Biological Supply Co.
2700 York Road
Burlington, NC 27215
Telephone no.: (910) 584–0381
Toll-free no.: (800) 334–5551
FAX no.: (800) 222–7112
1 set: $349.95

Acid rain; Air pollution; Animals; Aquariums; Biology; Chesapeake Bay; Earth science; Ecocolumns; Ecology; Ecosystems; Environmental awareness; Environmental influences; Environmental science; Fertilizers; Fishes; Insects; Natural resources; Plants (botany); Recycling; Sciences; Terrariums; Water; Water pollution.
1992

ENC–001068

Abstract: This unit is one of 24 elementary science curriculum units developed for grades 1–6. Each unit provides students with opportunities to learn about technology and topics in the physical, life, and earth sciences through direct observation and experimentation. In this 8-week unit, developed for grade 5, students come to understand the interdependence of living and nonliving elements in their environment by building, observing, and experimenting with ecosystems. Using two-liter bottles, students build terrariums and aquariums, which they later connect as an ecocolumn after studying the two separately. Students simulate the effects of some common pollutants such as road salt, fertilizer runoff, and acid rain on their ecosystems; report their findings; and pool their data. Finally, using the Chesapeake Bay as a model ecosystem, the class divides into groups representing various points of view, including dairy farmer, land developer, recreational boater, and watershed resident. As each group presents its needs and its impact on the environment, students perceive the complexity of environmental issues and in turn propose possible solutions and reach compromises. The teacher's guide contains 16 activities, each of which provides: an overview of the activity, objectives, background information, materials needed, preparation and procedural directions, extensions to the activity, and ways to evaluate student learning. The teacher's guide also includes information on maintaining live plants and animals, recycling activities, and an extensive bibliography citing resources for teachers and students, children's literature, games, computer programs, and videos. For each of the activities, the student activity book provides a "think and wonder" section; a materials list; a "find out for yourself" section that includes questions, procedures for setting up the activity; and an "ideas to explore" section. (Author/KSR)

Author: National Science Resources Center (NSRC).

In some cases, environmental science will be the focus of entire units or year-long science curricula. This series has other units of environmental interest.

Integrating Environmental Education and Science: Using and Developing Learning Episodes
Developed by the Environmental Education Council of Ohio. Distributed by ERIC/CSMEE, Columbus, OH (614) 292–6717.
This publication is designed to encourage environmental literacy and responsible environmental behavior through the implementation of the Ohio Model Science Program. It also attempts to assist curriculum developers in redesigning curriculum according to national and state reform initiatives.

The Local Environment (FAST 1) Foundational Approaches in Science Teaching (FAST), 2nd edition
Curriculum R&D Group, University of Hawaii, Honolulu, HI (805) 956–7863.
FAST is a sequence of three 1-year interdisciplinary, environmental science courses designed to provide students with investigative experiences and inquiry activities in the physical, biological, and earth sciences, as well as in the application of these sciences to environmental issues. In this course, developed for grades 6–10, students investigate the local environment to find basic biological, geological, and meteorological interrelationships in natural systems. Concurrently, students investigate basic concepts of science, including mass, volume, and density, as well as the relationship between density and buoyancy. Students also learn about changes in state and energy relationships.

The Environment:

The Science and Politics of Saving Our Planet

Grades 5–12

Teaching Units

Tom Snyder Productions, Inc.
80 Coolidge Hill Road
Watertown, MA 02172–2817
Toll-free no.: (800) 342–0236
1 kit: $149.95

Air pollution; Decision making; Economics; Environment; Land use; Political science; Pollution; Sciences; Social studies; Toxic wastes; Water disposal; Water pollution.

1991

ENC–000497

Abstract: "Decisions, Decisions" is a series of role-playing software packages specifically designed to generate informed discussion and decision making in the classroom, using only one computer. The program can be adapted for use with a variety of student populations in grades 5–12, and can be used in a number of content areas including science, language arts, and social studies. This package focuses on the environment and addresses science and social studies issues in the context of a local pollution crisis. The main topics covered include municipal waste management, water pollution, land use issues, the role of government in achieving environmental quality, the economics of environmental action, and other global issues. Package components include a teacher's guide, student reference books, and computer simulation software. The package can be used for a full class discussion with the teacher leading the entire group, or as a multi-team, cooperative learning activity. The simulation engages students in the following process: students read through their student reference books; as a group they prioritize their goals; they consult advisors who point students to relevant historical references (information from the advisors is contained in the student reference books); they engage in discussions of opposing viewpoints and come to a consensus on what action to take; and finally, the computer presents the consequences of their actions. At the end of the simulation, groups are scored by the computer based on how well they achieved their goals determined in the beginning of the simulation. Students also score themselves based on how well they achieved the priorities. (LZ)

Equipment: System requirements: Macintosh systems—color version requires minimum 2 MB internal memory and a 1.4 MB 3 1/2" disk drive; black and white version requires minimum 1 MB internal memory and an 800K 3 1/2" disk drive. Apple systems—Apple II+, IIe, or IIgs; 64K memory and a 5 1/4" disk drive. IBM/Compatible systems—requires minimum 256K memory; hard disk or a 3 1/2" disk drive; CGA, VGA, or EGA graphics. Network version: AppleShare or Novell based. Call for site licensing.

Author: David Dockterman.

The following resources also emphasize environmental decision making in the classroom.

Decision Making: The Chesapeake Bay
Sea Grant College Program, University of Maryland, College Park, MD (310) 405–6377.
This self-contained, interdisciplinary environmental education curriculum unit is designed for secondary students and adults to examine the management of a complex and threatened environmental system—the Chesapeake Bay.

Energy, Economics, and the Environment: Case Studies and Teaching Activities for Middle School
Center for School Improvement and Performance, Indiana Department of Education, Indianapolis, IN (317) 232–9141.
This booklet contains a curriculum for middle schools that focuses on energy, economics, the environment, and the interrelationships between these three areas of study. One purpose of the booklet is to provide teachers and students with a conceptual framework for analyzing complicated issues involving the economic implications of energy and environmental decisions. A second purpose is to provide teachers with a set of motivating, interdisciplinary teaching units focused on these issues.

Environmental Energy

Grades 4–7
Teaching Units

SAVI/SELPH, Center for Multisensory Learning, Lawrence Hall of Science, University of California, Berkeley, CA 94720
Telephone no.: (415) 642–8941
1 kit (Environmental energy module only): $129.00

Alternative energy sources; Energy; Energy sources; Energy transfer; Physics; Sciences; Solar energy; Wind energy; Work (Physics).

1983

ENC–000181

Abstract: "Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps" (SAVI/SELPH) is an interdisciplinary, multisensory science enrichment program designed for blind and visually impaired, orthopedically handicapped, learning disabled, developmentally disabled, emotionally handicapped, hearing impaired, and nondisabled students in grades 4–7. The program consists of three major components: 1) printed activity instructions for the teacher, 2) student equipment kits, and 3) an educational philosophy for incorporating science into the curriculum of disabled students. The activities are designed for small groups working under the close supervision of instructors. This module explores environmental energy. Four activities are included: Solar Water Heater, which introduces students to the concepts of solar energy and energy transfer; Sun Power, in which students explore the factors of color, collector surface, and volume that affect heat collection; Blowing in the Wind, in which students turn a pinwheel with a small battery-operated fan, count the revolutions of the pinwheel, and equate the rate of revolution to the amount of energy transfer; and Wind Power, in which students find that a larger pinwheel is capable of doing more work. A follow-up section after each activity provides an assessment to be conducted with each student. A matrix provides activity descriptions, science concepts, process skills, application skills, language development, and related learning resources for this module. (CCC)

Author: SAVI/SELPH, Center for Multisensory Learning, Lawrence Hall of Science.

Audience: Learning disabled students, physically disabled students, vision-impaired students.

The ENC *Catalog* includes several different types of kits. Some kits contain print materials and consumables, while some have software or laserdiscs. Below are some more examples from the SAVI/SELPH series, as well as other types of kits.

Environments
This SAVI/SELPH module explores environments and how certain organisms behave in different conditions.

Structures of Life
This SAVI/SELPH module explores the structures of life using fruits, seeds, and crayfish.

The California Water Story
Water Education Foundation, Sacramento, CA (916) 444–6240.
This packet contains materials needed to teach a unit of study (grades 4–6) on the topic of water as one of California's most important natural resources. The unit may be used as a supplement to the study of California as a state, or as a supplement to a physical science unit on natural resources.

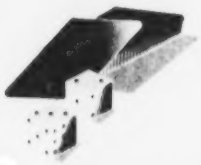
Habitats (INSIGHTS elementary science curriculum)
Education Development Center, Inc., Newton, MA (800) 225–4276.
INSIGHTS is a hands-on, inquiry-based, science curriculum consisting of a series of modules designed to provide elementary students with science experiences that will help them learn science skills and concepts, and to provide teachers with the guidance and background they need to teach science in the spirit of scientific exploration and discovery. This module (grades 2–3) contains 10 learning experiences in which students explore the physical factors that influence habitats and the ways in which organisms are adapted to their habitats.

Fish Banks, Ltd.

Grades 9–12
Activities/Game

Institute for Policy and Social Science Research
Hood House, University of New Hampshire,
89 Main Street
Durham, NH 03824
Telephone no.: (603) 862–2186
FAX no.: (603) 862–1488
1 kit: $100.00

Biology; Business; Decision making; Earth science; Ecological factors; Ecology; Ecosystems; Environment; Environmental impact; Environmental management; Environmental risk assessment; Environmental sciences; Ethics; Fisheries; Fishing industry; International cooperation; Marine biology; Mathematics; Natural resources; Renewable resources; Sciences; Shipping industry; Social studies.
1990



ENC–000984

Abstract: This game, developed for high school and college students, is a real world interdisciplinary microcomputer simulation involving cooperative learning and group problem solving. It illustrates the dynamics of natural resource use, biological systems, environmental science, and economics. Participants work in teams to develop strategies for managing their fishing companies and maximizing their assets. The simulation conveys a variety of messages tailored to the interests of the participants and the teacher's goals. The game can be used to reveal why marine fisheries and other natural resources have been depleted; illustrate the interaction of ecological, economic, business, and psychological forces that cause overuse of natural resources; offer practice in communication, negotiation, and collective decision making; furnish a model system that can be used in teaching principles of systems dynamics; and motivate students to be informed and effective citizens. The kit contains all of the materials required for a game session of 12 to 40 people including a game administrator's manual that gives step-by-step instructions for organizing the game; a materials manual that provides masters for all briefing and debriefing overheads, as well as student handouts; a Macintosh or PC program disk to assist in calculations; a game board; wooden ships; and fish money. A video is also available that provides a description of the game and interviews with the developer, teachers who have used the game in their classrooms, and students who have played the game. (Author/KSR)

Author: Dennis L. Meadows, Thomas Fiddeman, Diana Shannon.

Publisher: Durham, NH: Institute for Policy and Social Science Research, Laboratory for Interactive Learning.

Evaluation: Published reviews: Crookall, David. *Simulation and games*. June 1990. Vol. 21, Issue 2, p. 208–211.
Field tested in the following schools: Oyster River High School, Durham, NH (January 1991); Salem High School, Salem, NH (January 1991); University of New Hampshire (January 1991).

Equipment: System requirements: Macintosh with a 3 1/2" disk drive or IBM with either a 3 1/2" or a 5 1/4" disk drive.

Many Earth Day appropriate resources are geared toward younger students. Here are two more that could be used in high school classrooms.

Diversity of Marine Animals
Compiled and edited by Bobby N. Irby, Malcolm K. McEwen, Shelia A. Brown, Elizabeth M. Meek.
MS–AL Sea Grant Consortium, Ocean Springs, MS (601) 875–9341.
Man and the Gulf of Mexico is a marine science curriculum developed for grades 10–12 to meet the need for marine science education in all secondary schools in Mississippi and Alabama. This volume is intended to help students realize the diversity of organisms present in a marine environment, to present general information relative to the various animals that live in a marine environment, to compare and contrast adaptations for survival made by groups of marine animals, and to provide students with various types of experiences that will help them become proficient in identifying some of the common marine animals.

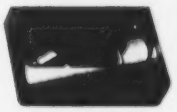
GTV Planetary Manager
National Geographic Society, Washington, DC (800) 368–2728.
Students in grades 5–12 use computer software, text, and a visual database to investigate environmental problems and grapple with solutions. Video segments include "Spaceship Earth" in trouble, cycles of the biosphere, resource use, the complexity of environmental issues, and the positive actions that can be taken.

The Greenhouse Effect

Grades 7–12
Supplementary Materials

Scott Resources, Inc.
P.O. Box 2121
Fort Collins, CO 80522
Toll-free no.: (800) 289–9299
1 videotape: $69.95

Air pollution; Carbon cycle; Carbon dioxide; Climate; Climatology; Deforestation; Earth science; Fossil fuels; Global warming; Greenhouse effect; Infrared radiation; Sciences; Tropical rain forests.



1990

ENC–000159

Abstract: The Earth Science Video Library series consists of 12 instructional science videos, designed for grades 7–12, that focus on topics related to Earth, its natural resources, and the impact of humans on the global environment. Each video program combines full-motion, color images with computer graphics and contains a teacher's pamphlet. A mock news report of heat, agricultural ruin, and coastal land loss in the year 2044 begins this video about the greenhouse effect. The processes that create the greenhouse effect, greenhouse gases and their sources, the carbon cycle, scientific monitoring of climate change, and mathematical modeling of the possible future effects of increased levels of greenhouse gases are discussed in this video. The video also suggests efforts that could be made at the local and national levels to reduce gas emissions. The teacher's guide contains a summary of video content, vocabulary words, four discussion points with discussion questions, data on carbon dioxide flow, and four ideas for classroom activities designed to supplement the videotape. Hands-on activities involve students in exploring the global warming issue, demonstrating the principles of greenhouse warming, and sketching the carbon cycle. (LZ)

Author: Produced by Scott Resources; written and directed by Herb Saperstone.

Evaluation: Published reviews: Brotak, Edward. "The Greenhouse Effect." *Weatherwise*. October, 1991. Vol. 44, Issue 5, p. 38.

The Earth Science Video Library contains several other titles; below are two more of Earth Day interest. Other relevant videos are also highlighted here.

Fossil Fuels
This video presents an overview of Earth's most widely used, nonrenewable energy resources: coal, petroleum, and natural gas. Topics covered include the formation of fossil fuels, the quantity and locations of oil reserves in the world, and the growth of fossil fuel consumption.

Acid Rain: The Invisible Threat
This video discusses the general nature and causes of acid rain, the effects of acid rain on the environment, and steps people must take to lessen the impact of acid rain. Hands-on activities allow students to conduct experiments on the effects of acids and bases, predict patterns of acid rain deposition, calculate the extent to which they cause acid rain, and debate the social issues involved.

The Mohawk Legacy: A Matter of Survival
Project Future, Potsdam College of the State University of New York, Potsdam, NY (314) 267–2622.
This video focuses on the cultural, environmental, and economic impact of water contamination on Akwesasne, an Indian reservation located near the St. Lawrence Seaway on the New York-Quebec border.

Options for the Future: A Guide to Coastal Resource Management
University of New Hampshire, Sea Grant Extension Program, Durham, NH (603) 749–1565.
This video and booklet focus on a number of critical issues facing New Hampshire and Maine coastal communities. The video is meant to be helpful to those who are faced with making decisions about the coastal areas, and to those who wish to understand the factors influencing these decisions, such as developers, property owners, fishermen, and recreational users of the shore.

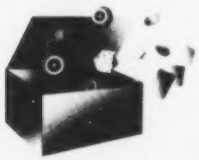
Grow Your Own Tree:

A Curriculum Guide for Second Grade Classrooms

Grade 2
Teaching Units

Education Director,
National Arbor Day
Foundation
100 Arbor Avenue
Nebraska City, NE 68410
Free

Air quality; Ecology; Environmental education; Forestry; Reforestation; Sciences; Trees.



1991

ENC–000514

Abstract: This multimedia curriculum kit, designed as a 1- or 2-week instructional program for early elementary grade levels, teaches the value of trees and encourages environmental stewardship. The teacher's guide includes: an introduction to J. Sterling Morton, who is credited with originating Arbor Day in 1872; outlines of 1- and 2-week versions of the program that can be taught independently or as a science supplement; a section about Filmstrip A, "Special Things About Trees"; a section about Filmstrip B, "Tree Magic"; a bibliography; and reproducible activity masters. Both filmstrip sections include preparatory activities and sections with comprehension questions, follow-up activities, evaluation ideas, and community-oriented enrichment activities. Filmstrip B also includes a planting activity in which students grow trees from seeds; after 40 days the seedlings are transplanted, and the students are rewarded with a free 6-month membership in the National Arbor Day Foundation. Each filmstrip coincides with a narrated audiocassette, as well as a poster reflecting its central ideas. Planting packets contain 25 peat planting pellets, 75 thornless honeylocust seeds, and 25 emery boards. The "Celebrate Arbor Day" booklet describes the Foundation in detail and provides a variety of information, activities, and references related to the Arbor Day celebration. (WAJ)

Author: Prepared by Mimi Wickless.

In the ENC *Catalog*, it is very convenient to search by grade level. The resources on this page were developed for elementary classrooms.

Ocean Management: Who Owns the Sea?=El Manejo de los Océanos: Quién es el Dueño de los Mares?
Evaluation, Dissemination, & Assessment Center, Los Angeles, CA (213) 740-1961.
This bilingual marine education curriculum guide for teachers of grades K–6 is the second unit in the Wet and Wild series. Content is covered first in English and is then repeated in Spanish. This guide focuses on ocean management to ensure the health and welfare of our ecosystem. Thirteen multidisciplinary activities are contained in three sections covering ownership of the sea, coastal management, and the limitations of the seas' resources.

Coastal Capers: A Marine Education Primer
Lundie Spence, Vivian Barbee Coxe; edited and designed by Kathy Hart; illustrated by Anne Marshall Runyon.
University of North Carolina Sea Grant College Program, Raleigh, NC (919) 515–2454.
This marine education primer is part of the UNC Sea Grant Marine Education Manual series and is designed to provide teachers of elementary, remedial, and special education classes with activities that introduce the marine environment. Students are motivated to learn basic skills in science, mathematics, language arts, social studies, and art.

Sensing the Sea: A Curriculum Guide in Marine Education for Grades Two and Three
Ellen Odell-Fisher, Ronald N. Giese.
Sea Grant Communications, VA Institute of Marine Science, Gloucester Point, VA (804) 642–7170.
This teacher's guide allows students in grades 2–3 to learn science process skills as they interact with aquatic organisms in a saltwater aquarium.

15

Keepers of the Earth

Grades K–6
Activities/Book

Fulcrum Publishing
350 Indiana Street, Suite 350
Golden, CO 80401
Toll-free no.: (800) 992–2908
1 text : $19.95
1 teacher's guide: $9.95

Earth science; Ecology; Environmental education; Folklore; Native American culture; Native American literature; Native Americans; Natural history; Sciences; Storytelling.

1989

ENC–000457

Abstract: This book, for children in grades K–6, is a collection of Native American stories and hands-on activities that promote appreciation of, and responsible action toward, the Earth and its people. The book is divided into two parts that unite Western scientific methods and Native American traditional stories. Part I offers thoughts and suggestions for facilitating the use of stories and activities in both indoor and outdoor settings. Part II uses stories as introductions to the subjects explored in the activities. Stories and activities are arranged under broad topical headings that include agriculture and farming, animals, astronomy, cultural studies, Earth stewardship, ecological principles, energy, geology and soil, habitats, human impact on the Earth, human relationships and personal growth, life and death, natural resources, personal relationships with the Earth, plants, seasons, sensory awareness, and weather. Each story is followed by a discussion section that provides background information on the topics it introduces. Chapters end with suggestions for extending the experience. Activities are marked as being appropriate for younger children (ages 5–8 years) or older children (9–12 years). The teacher's guide addresses the nature of Indian myths and the cultures from which these particular stories come. Maps show the cultural areas and tribal locations of the Native American groups discussed in the book and in the teacher's guide. The teacher's guide also addresses the educational philosophies and approaches upon which the book is based. "Further Resources on North American Indians and Environmental Studies" in the teacher's guide provides lists of books for learning and teaching about North American Indians and the Earth, as well as guides to values education and to facilitating storytelling, puppet shows, and interdisciplinary studies. (LZ)

Author: Michael J. Caduto and Joseph Bruchac ; illustrations by John Kahionhes Fadden and Carol Wood.

Evaluation: Published Reviews:
Bodin, Madeline. "Keeping Tradition Alive." *Publisher's Weekly*. December 14, 1992. Vol. 239, p. 23.
Booe, Kevin Wayne. *School Library Journal*. October, 1991. Vol. 37, Issue 10, p. 81.
Lewis, Valerie. "Environmental Action." *Instructor*. August, 1991. Vol. 101, Issue 1, pp. 37–38.
Riddle, Bob. *Science and Children*. November/December, 1989. Vol. 27, Issue 3, p. 71.
Schimmel, Nancy. "Storytelling: Keepers of the Earth." *Whole Earth Review*. Summer, 1991. Issue 71, p. 49.

The authors of this book have also produced two other works with Fulcrum Publishing that use Native American stories to teach children about the environment.

Keepers of the Animals: Native American Stories and Wildlife Activities for Children
Michael J. Caduto and Joseph Bruchac; illustrations by John Kahionhes Fadden and Melody Lightfeather.
This book is a collection of Native American Indian stories and hands-on activities that promote understanding and appreciation of, empathy for, and responsible action toward the Earth and its people. Written for children in grades K–6, the stories explore the topics of wildlife ecology, environmental and stewardship issues related to animals, and the natural history of North American animals.

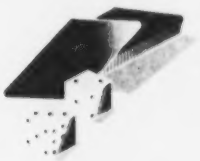
Keepers of the Night: Native American Stories and Nocturnal Activities for Children
Michael J. Caduto and Joseph Bruchac; story illustrations by David Kanietakeron Fadden; chapter illustrations by Jo Levasseur and Carol Wood.
Stories and activities in this book for grades K–6 provide a complete program of study in the major concepts and topics of astronomy, nighttime weather, and other aspects of the night sky, as well as nocturnal plants and animals from habitats throughout North America.

The Lake Game for Youth

Grades K–12
Activities/Game

Minnesota Sea Grant,
University of Minnesota
1518 Cleveland Ave. N #302
St. Paul, MN 55108
Telephone no.: (612) 625–9288
1 text: Free

Earth science; Ecology; Environmental policy; Lakes; Natural resources; Pollution; Sciences; Water pollution; Water resources; Wildlife management; Minnesota.



1993

ENC–000170

Abstract: This educational game, designed for elementary and secondary students, is a group activity intended to introduce students to various environmental values and protection strategies. The game involves constructing an imaginary lake environment using a bucket of water to represent the lake, food coloring to "pollute" the water, and plastic fish that dwell in an increasingly uninhabitable environment. Students participate in hypothetical scenarios in which they assume roles as a variety of individuals who use a lake or lake water. Players decide whether or not to perform actions such as polluting the lake, withdrawing water, and catching fish, and then discuss the consequences of their decisions. The identified goals of the game are to increase the players' awareness of the number of people in the community who depend upon the lake for drinking water, recreation, and employment; the potential socioeconomic ramifications of lake pollution; and how the students can change their own actions to minimize pollution of the lake. Background information is provided for instructors, as well as suggested resources for additional materials. Although this is a regionally produced resource, it can be used effectively throughout the country. (WAJ)

Author: Barbara Liukkonen.

Marine areas are the focus of several ENC resources. Interested teachers should also become aware of the many sea grant programs across the United States. These programs produce curriculum materials about regional marine environments.

The Lake Game for Adults Barbara Liukkonen.
This educational game is a group activity intended to introduce adult participants to various environmental values and protection strategies. Players participate in hypothetical scenarios in which they assume roles representing a variety of individuals who use a selected lake or lake water.

The Coasts of Wisconsin James Napoli. Sea Grant Office, University of Wisconsin, Madison, WI (608) 263–3259.
This booklet provides general information on the Great Lakes coastal areas of Wisconsin. The information is divided into four sections: an introduction, a review of the Lake Superior coastal area, a review of the Lake Michigan coastal area, and strategies for managing the coasts.

Marine Education: A Bibliography of Educational Materials Available From the Nation's Sea Grant College Programs Gulf Coast Research Laboratory, P.O. Box 7000, Ocean Springs, MS, 39564.
This extensive bibliography provides descriptions of a diverse range of marine education resources and programs available through 30 Sea Grant College Programs in the United States. Each Sea Grant Program or Institute is listed separately along with the resources produced in that particular State or domain.

Supplemental Curriculum Activities for Use With Holling Clancy Holling's Paddle-To-the-Sea
Marcia L. Seager, Rosanne W. Fortner, Timothy A. Taylor.
Ohio Sea Grant, Ohio State University, Columbus, OH (614) 292–8949.
This book of activities and a complementary computer program are intended for use in grades 3–6 as a supplement to *Paddle to the Sea*. The activities cover science and interdisciplinary topics, including Great Lakes geography, animal tracks and beaver ponds, fish anatomy, forestry and how trees are used, the food chain and food webs, locks, using small pulleys, shipping, weather folktales, life in an estuary, and sharing ecosystem resources.

Race To Save the Planet:

Level 1 Videodisc

Grades 5–12
Resource Unit

Scholastic, Inc.
P.O. Box 7502,
2931 East McCarty Street
Jefferson City, MO 65101
Toll-free no.: (800) 325–6149
FAX no.: (314) 635–5881
1 videodisc set: $195.00

Agriculture; Air pollution; Biological diversity; Climate changes; Conservation (Environment); Deforestation; Earth science; Earth systems; Ecology; Endangered species; Energy; Energy consumption; Environment; Environmental damage; Environmental influences; Environmental issues; Environmental risk assessment; Extinction (Species); Global warming; Greenhouse effect; Habitats; Hazardous materials; Ozone depletion; Sciences; Waste disposal; Water pollution; Water quality.

1990, 1993

ENC–000681

Abstract: This laserdisc is one component of the Interactive NOVA laserdisc series, which uses resources from the science television program, NOVA, to engage students in grades 5–12 in the investigation of animals, human birth, and the environment. This laserdisc provides teachers with NOVA coverage of environmental issues and is available in Spanish and English. A comprehensive, bar-coded teaching guide provides teachers with interactive lesson plans and the ability to demonstrate a variety of concepts in the curriculum. Each of the nine lessons is designed to incorporate a range of cognitive and research skills, including recall, analysis, interpretation, and evaluation. Lessons cover changes in the atmosphere (including the effects of greenhouse gases and chlorofluorocarbons); air and water pollution; threats to species and biodiversity; waste generation and disposal; habitat destruction; agricultural practices, such as irrigation and pesticide use and the connection between poverty and world hunger; development and population growth; water conservation; and how individual lifestyle changes can contribute to improving environmental quality. Lesson plans contain sections on objectives, background information, teaching strategies, questions for discussion or writing assignments, suggested activities, and student worksheets in Spanish and English. (LZ)

Author: WGBH Educational Foundation.

Audience: Bilingual students, Hearing impaired students.

Equipment: System requirements: Macintosh computer with a 20 MB or larger hard disk; videodisc player; a color monitor (composite type); RS–232 cable to connect videodisc player and Macintosh. Bar code reader is optional.

Other titles in this NOVA Series are also related to Earth Day. From the ENC *Catalog*, be sure to take a look at the following items.

Race To Save the Planet Interactive
This program combines video footage and slides focused on environmental issues recorded on laserdiscs, with a database of environmental information on a Macintosh computer. Lesson topics include global warming and climate change, ozone depletion, water conservation, threats to species and biodiversity, habitat destruction, waste generation and disposal, economic consequences of a manufacturing company's environmental decisions, energy sources and conservation, development and population growth, and how individual lifestyle changes can contribute to improving environmental quality.

Animal Pathfinders: Level 1
This laserdisc provides teachers with NOVA footage of habitats, animals, and animal behavior, and is available in Spanish and English. A comprehensive, bar-coded teaching guide provides teachers with interactive lesson plans and the ability to visually demonstrate a variety of concepts in the curriculum. The laserdisc uses video and slides of habitats of salt marshes, forests, deserts, mountains, and arctic tundra to teach about caribou, bats, ospreys, bullfrogs, eels, dragonflies, and other creatures that inhabit these areas.

Animal Pathfinders Interactive
This program combines video footage and slides of animals and habitats recorded on laserdiscs with a database of biological information on a Macintosh computer. The program is intended to be used as an integral part of a biology or life sciences curriculum focused on classification, ecology, environmental issues, animal behavior, migration, adaptation, and evolution.

Relationships of Living Things

Grade 3
Teaching Units

Macmillan/McGraw-Hill School Division
22G East Danieldale Road
DeSoto, TX 75115–8815
Toll-free no.: (800) 442–9685
Basic print materials: $69.45
Unit 14 package (without activity materials kit): $106.71
Unit 14 package (including activity materials kit): $211.14

Ecology; Ecosystems; Energy; Food chain; Habitats; Life cycle; Recycling; Sciences; Water cycle.

1993

ENC–000248

Abstract: The "Macmillan/McGraw-Hill Science" program includes 42 self-contained, thematic science units for grades K–8. The program is organized around a sequenced series of hands-on and minds-on activities and investigations and uses a four-step constructivist lesson cycle: engage, explore, develop, and extend and apply. This unit's major theme is Systems and Interactions; related themes are Energy and Patterns of Change. In this unit, students in primary and intermediate grades explore living organisms and their relationships with each other and their environments. Lessons cover where organisms live and the living and nonliving things that make up an ecosystem; the roles of producers, consumers, scavengers, and decomposers in an ecosystem; how energy moves through an ecosystem; how balance is maintained in an ecosystem; and how matter is cycled through an ecosystem. The unit ends with an exploration of the ways in which students can recycle and reuse natural resources. Two major science concepts are emphasized: that living things require energy and that the environment is always changing. Three types of assessment—performance, portfolio, and tests—are included. (LZ)

Author: Mary Atwater, Prentice Baptiste, Lucy Daniel, Jay Hackett, Richard Moyer, Carol Takemoto, Nancy Wilson.

This series by Macmillan/McGraw-Hill contains many other units that could be of use in teaching about the environment. A few are described here.

Living Things Grow and Change
In this unit, students in primary and intermediate grades explore the characteristics of living things. Students explore life processes (growth, development, reproduction, and response to stimuli); structures that perform life functions; the needs of living organisms; and the differences in the needs of plants and animals. Students examine cells, evolution, and extinction, and observe organisms in a natural setting.

Changes in Ecosystems
In this unit, middle school students explore natural and human-caused changes that occur in ecosystems. Lessons cover the following topics: what makes up an ecosystem; environmental changes caused by people; the definition, effects, and causes of pollution; the effects of resource use on the environment; and changes leading to species extinction.

Earth's Ecosystems
In this unit, middle school students explore specific kinds of interactions that take place between living and nonliving parts of ecosystems. Lessons cover the following topics: what makes up an ecosystem, cycles in ecosystems, biomes, the location of biomes, how humans affect biomes, population and population density, how populations interact, how energy moves through ecosystems, how ecosystems change over time, and how humans affect ecosystem change over time.

Earth's Riches
In this unit, middle school students examine the stability of Earth's systems and natural resources and how that stability is affected by human activity. This unit emphasizes two major concepts: that humans are responsible for the use and conservation of natural resources, and that the Earth is composed of various materials and natural resources with unique properties.

Resources

Grades 6–12
Teaching Units

Globe Book Company
4350 Equity Drive
Columbus, OH 43228
Telephone no.: (614) 876–0371
Toll-free no.: (800) 848–9500
1 student text: $9.25
1 teacher's manual: $12.95

Air; Air pollution; Air quality; Conservation (Environment); Deforestation; Incinerators; Land use; Natural resources; Ozone depletion; Pollution; Recycling; Sciences; Solid wastes; Urban development; Waste disposal; Wastes; Water pollution; Water resources.

1993

ENC–000438

Abstract: Science, Technology, & Society is a process-oriented program of instruction that provides students in grades 6–12 with the strategies and skills needed to deal with current science and technology issues. Each unit of the program contains a teacher resource manual and a student textbook. Issue-oriented lessons use primary source readings, published in the early 1990s in newspapers and magazines, as the basis for learning and making decisions about science-related and technology-related issues. This unit is divided into five modules that cover natural resources. The first is a problem-solving module that teaches strategies for analyzing issues, gathering information, making decisions, and taking action. The four thematic modules that follow can be used in any order. The modules cover the following topics: water pollution; water allocation during droughts and how to ensure clean drinking water for the future; reduction of smog and depletion of the Earth's ozone layer; urban development, landfills, deforestation, and natural disasters; and recycling, incinerators, conserving natural resources, and new technologies. A Community Resource Directory identifies sources of information from all regions of the United States. The teacher resource manual includes cross curriculum connections that provide ways to integrate the biological, physical, chemical, and earth sciences in a single science course and to integrate social studies, language arts, and mathematics into the science curriculum. Assessing Student Performance provides teachers with guidelines for using alternative evaluation techniques. Reproducible masters provide students with a framework for recording their ideas. (LZ)

Author: Consultants/contributing writers, Jon L. Harkness, Pam Helfers Riss, Dorothy A. Tonnis, Ron Truex, David M. Helgren, Joan Develin Coley.

Many new resources examine the relationship between science, technology, and society. These issues often raise environmental concerns as well. The series above includes two more titles, and the ENC *Catalog* contains other resources that address technology.

Populations
The four thematic modules in this Science, Technology & Society unit can be used in any order. The modules cover the following topics: habitat destruction, rain forest conservation, the protection of wildlife from poaching, and Federal regulations to protect endangered bird species; urban population growth, birth control issues, and U.S. immigration policies; nutrition, the spread of tuberculosis, pesticides in food, AIDS prevention and testing, and research on genetic disease; and world famine, farming methods, food irradiation, and genetically engineered crops.

Impacts of Technology
This Science, Technology & Society Unit is divided into five modules that cover the impacts of technology on the environment.

Relating to the Living World : An Exploratory Study of the Food and Fiber System From a Nontraditional Approach Susan M. Fritz and Lloyd C. Bell.
Institute of Agriculture and Natural Resources, University of Nebraska, Lincoln, NE (402) 472–8739.
This exploratory curriculum for junior high students contains eight activity-oriented units and introduces new subject areas related to agriculture that are relevant to both nontraditional and traditional students. Unit topics include conservation and management of natural resources, food safety, water quality, the companion animal industry, and technology use in the food and fiber industry.

Science in the Trees, Please

Grades 6–8
Activities/Book

Cape-Tech
P.O. Box 115
Wynnewood, PA 10096–0115
Telephone no.: (215) 789–0924
1 text: $15.00

Botany; Decomposition; Deforestation; Forests; Leaves (Trees); Photosynthesis; Plants (Botany); Plant growth; Sciences; Tree identification; Trees.

1993

ENC–000493

Abstract: This collection of activities, intended for grades 6–8, is designed to teach about trees and their roles in the environment, while emphasizing the efficient use of natural resources and the inportance of preserving the environment. The activities can be performed in a public park, on a school campus that has trees, or on field trips. The topics discussed are: forest development, in which students investigate a plant's need for sunlight as an energy source and the uses of plants as sources of food, oxygen, and medicine; forest types and forest communities, in which students explore the many forest types in eastern North America; biotic and abiotic factors, in which students investigate the relationships between habitat size and the number of organisms; decomposition, in which students explore the effectiveness of the fungi that grow on the sides of trees; gaps, in which students study "openings" in forests caused by fire, wind, or some other disturbance; tree factories, in which students investigate how plants produce their own food; tree cookies, in which students investigate how the annual rings indicate the growth pattern and age of a tree; tree identification, in which students identify the many types of species of trees by their leaf veins, margins, shapes, arrangements, and parts; and tree characteristics, in which students explore the different species of trees that vary considerably among forest types. Each section includes illustrations, short answer questions, fill-in tables, word search exercises, and crossword puzzles. (TDB)

Author: Cathy Hufstedler and Jane Loggins.

Since trees are important and indigenous to so many communities, many classrooms will study trees and forests for Earth Day. Trees are the central focus of the following resources.

No Trees . . . No Life: Saving Tropical Forests International Centre for Conservation Education, Greenfield House, Guiting Power, Cheltenham, Gloscester, GL545TZ UK. Telephone: 0451–850777.
The International Centre for Conservation Education (ICCE) designed this teaching resource package as an introduction to the biodiversity of the tropical rain forest and some of the complex issues relating to tropical forest conservation. The package is centered around a set of 20 full-color slides that show various aspects of tropical trees and their products.

Trees Full Option Science System (FOSS)/Britannica Science System (BSS), Encyclopedia Britannica Education Corporation, Chicago, IL (800) 554–9862.
The Full Option Science System (FOSS) series consists of instructional modules organized under four topic headings: Life Science, Physical Science, Earth Science, and Scientific Reasoning and Technology. This module (grades 5–6) explores trees in and around the classroom.

Trees Joan Westley. Creative Publications, Oaklawn, IL (800) 624–0822.
This series of teacher resource books, developed for grades preK–2, presents an integrated approach to teaching the curriculum. Each of these books centers on one powerful theme, and as children investigate the theme they engage in language, mathematics, science, cooking, poetry, literature, dramatization, and art activities. This book contains activities in which children learn about the life cycle of trees, including the seeds, fruits, and nuts; the products that come from trees, such as paper, maple syrup, and rubber; the parts of a tree, such as its trunk, bark, leaves, and roots; and the animals that live on and around trees, such as insects, birds, and squirrels. Additional activities include composting leaves; making paper; planting seeds; designing posters to warn of dangers to trees; trees from around the world; and the use of trees in holiday traditions.

Splish Splash

Grades K–3
Activities/Book

North Carolina Big Sweep
P.O. Box 550
Raleigh, NC 27602
Telephone no.: (919) 856–6686
1 text: $3.00 (outside North Carolina), $2.00 (in North Carolina)

Aquatic life; Ecology; Environment; Environmental awareness; Landfills; Marine biology; Recycling; Sciences; Wastes; Water pollution; Water resources.

1992

ENC–000295

Abstract: This collection of activities for ages 5–7 is designed to promote environmental awareness and concern about litter in aquatic and marine environments. Although this is a regionally produced resource, it can be used effectively throughout the country. A girl, a boy, a fish, a bird, and a turtle are depicted throughout the activities, which include spelling, reading, art, problem solving, and science. Each activity follows the same format; they provide discussion questions, and involve the use of worksheets, music, art, games, and/or storyboards (with finger puppets). The activities address topics such as the recycling of trash and wildlife endangerment caused by pollution. (WAJ)

Author: Editorial contributors, Ed Maxa, Lundie Spence, Susan Bartholomew, Anne Hice, Karen Dickerson, Melva Okun, Sheila Jones, Celeste Wescott, Carla Burgess.

Publisher: Raleigh, NC: UNC Sea Grant College Program.

Many curriculum resources in this Earth Day *Focus* emphasize hands-on activities because they can be easily added to an existing curriculum.

Habitat Lab
Reading is Fundamental (RIF), Washington, DC (202) 287–3220.
This science and reading motivation program is designed to supplement existing science curricula for the upper elementary grades and to integrate science and technology with reading through a series of activity labs. This unit of the STAR program involves students in exploring the interdependence between animals and plant life by observing student-made habitats. Directions for building earthworm, cricket, and mealworm habitats are provided.

Activities for the Changing Earth System: Curriculum Activities for Teaching About Global Environmental Changes Earth Systems Education Program, Ohio State University, Columbus, OH (614) 292–9826.
This resource book, designed for middle and high school science classes, includes curriculum activities to encourage the investigation of global change issues. The activities focus on the following topics: biodiversity, tree migration, endangered and threatened species, sea levels, ozone depletion, global climate change, glacier shrinkage, volcanic eruptions, population growth, deforestation, greenhouse effect, shrinking freshwater resources, and global warming.

WonderScience: Fun Physical Science Activities for Childern and Adults To Do Together
American Chemical Society, Education Division, Room 810, 1155 16th St. NW, Washington, DC 20077.
WonderScience is a periodical issued by ACS and the American Institute of Physics. The hands-on activities described in this periodical are intended to be performed by elementary school students under the direct supervision of an adult. Activities are often relevant for Earth Day; for example, one issue was about recycling.

The Coastal Zone: Activities for the Classroom
John Trowbridge. Chauvin, Louisiana Univerisities Marine Consortium, Chauvin, LA (504) 342–7591.
This booklet includes a variety of hands-on laboratory activities for grades 4–12 and is designed to encourage students in Louisiana to become better stewards, managers, and decision makers with respect to the natural resources of the coastal zone of Louisiana. Activities emphasize process skills and concept development, and frequently involve investigations of local marine life.

Test Tube Zoo

Grades 6–12

Teaching Units

NASA CORE/
Lorain County JVS
15181 Route 58 South
Oberlin, OH 44074
Telephone no.: (216) 774–1051
FAX no.: (216) 774–2144
1 videocassette: $20.00
1 teacher's guide: $14.95

Animal behavior; Animals; Art; Career awareness; Cryogenics; Endangered species; Extinction (Species); Genealogy; Genetic disorders; Genetics; Habitats; History; Offspring; Reproduction (Biology); Sciences; Scientific research; Social studies; Zoology.

1991

ENC–000985

Abstract: This series of videos, developed for broadcast on PBS, focuses on the research of several "new explorers" on the cutting edge of scientific discovery, who are extending the frontiers of science, nature, and environmental conservation. The goal of this series is to introduce students to science as a career possibility. Each episode includes a teacher's guide, which contains hands-on activities for the classroom or a structured field trip that allow students to experience activities that parallel or complement those of the scientists in the video. In this episode, Dr. Betsy Dresser of the Cincinnati Zoo explains how the latest methods in human reproductive technology are helping to save endangered animal species. Dr. Dresser combines sperm from a rare male leopard cat with an egg from a female leopard cat to create a test tube embryo, which is then transplanted into a domestic cat that becomes the surrogate mother. The teacher's guide, developed for grades 6–12, contains activities that require students to examine the role of modern zoos in helping to save endangered species. This guide provides an interdisciplinary approach to teaching science that includes history, art, and social studies. While students explore zoo biology, they are asked to synthesize and evaluate information and then to prioritize and make decisions concerning real situations affecting wildlife today. (Author/KSR)

Author: Kurtis Productions Inc.; WTTW, Chicago.

Publisher: Chicago: WTTW.

The "New Explorer" series includes various episodes that emphasize Earth Day issues, such as threatened species or areas of the world in environmental crises.

Flight for Survival
In this episode, Dr. James Grier climbs 80 feet up a tree to a bald eagle's nest in Lake of the Woods, Ontario, so that baby eaglets can be banded, captured, and relocated from Canada into areas where the bald eagle has disappeared. The goals of this episode and the accompanying teacher's guide are to develop in students a sensitivity to the environment, illustrate examples of how people can live in harmony with nature, sensitize students to the need for preservation of endangered species, and explore career opportunities available in science-related fields.

20th Century Medicine Man
In this episode, ethnobotanist Mark Plotkin collects plants from deep inside the Brazilian rain forest with the help of the men of the Tirilo Indian tribe and the tribal shaman. These plants, many of which have been used by natives for centuries to cure their health problems, will be tested as possible cures for cancer and other diseases at the National Cancer Institute. The activities in the teacher's guide, developed for grades 4–8, examine the people, the animals, and the plants of the rain forest and the delicate ecological balance in which they coexist. Art, language arts, theater, and social studies activities are integrated with science to provide an introductory understanding of life in the rain forest and its global implications.

Crisis: Planet Earth
In this episode, scientists Dale Quattrochi and Jeff Luvall travel to Salt Lake City and also high above a Costa Rican rain forest to use an infrared scanning instrument to take the Earth's temperature and measure moisture levels. Classroom activities, developed for grades 7–9, are centered around temperature measurements, experiments on heating, energy usage in the home, the ecology of cooling ponds for power plants, electricity generation, water chemistry, and studies of global warming.

Threatened and Endangered Animals

Grades 5–8
Teaching Units

Stipes Publishing Company
10-12 Chester Street
Champaign, IL 61820
Telephone no.: (217) 356–8351
FAX no.: (217) 356–5753
1 student edition: $9.80
1 teacher edition: $20.80

Animals; Biology; Civic responsibility; Decision making; Ecology; Ecosystems; Endangered species; Environmental influences; Ethics; Exotic species; Extinction; Food chain; Habitat destruction; Habitats; Hunting; Marine biology; Sciences; Wetlands.

1993

ENC–001074

Abstract: This extended case study, developed for grades 5–8, introduces learners to a number of issues related to extinct and endangered animals. It also introduces students to a number of endangered animals across the United States, including the bison, the timber wolf, the golden-cheeked warbler, bats, sea turtles, the Hawaiian goose, the black-footed ferret, the Key deer, manatees, and many others. Information on the life histories of these animals, the environments in which they live, the reasons they are endangered, and other issues is provided. Students investigate endangered or threatened animals in their own communities and develop citizenship action plans that are evaluated for use in helping to resolve local issues. The case study is divided into four sections: science foundations, which includes the important science knowledge associated with endangered species; issue awareness, which is an introduction to some of the issues associated with endangered animals and the skills associated with the analysis of these issues; issue investigation, which includes the skills associated with investigating endangered species issues in the local community or region and the application of these skills in actual issue investigations; and citizenship action, which includes helping students learn how to use the strategies associated with issue resolution. The teacher's guide provides sample learner objectives for each chapter, teacher notes, directions for each of the activities, questions concerning animal rights and other moral questions arising from endangered species issues, and supplemental activities. (Author/KSR)

Author: David Hagengruber and Harold Hungerford; teacher edition by Trudi L. Volk and David Hagengruber.

Included here is a selection of resources dealing with endangered and extinct animals.

Mammals: A Multimedia Encyclopedia
National Geographic Society, Educational Media Development, Washington, DC (800) 368–2728.
This encyclopedia on CD-ROM contains interactive information about more than 200 mammals from around the world. A user's guide and map accompany the CD-ROM. The color map depicts the political boundaries and natural features of Africa on one side and vegetation boundaries with information on Africa's endangered mammals on the other side.

Sea Turtles in Louisiana's Coastal Waters
Deborah A. Fuller, Anne M. Tapan, Mary C. Hester.
Louisiana Sea Grant Center for Wetland Resources, LSU, Baton Rouge, LA (504) 388–1558.
This report provides background information on five species of sea turtle that inhabit the Gulf of Mexico and the Caribbean Sea. The report discusses the chief causes of turtle mortality, examines preservation measures being taken, and summarizes the results of an investigation of the population status of sea turtles in Louisiana's coastal waters.

Wildlife in Danger
International Centre for Conservation Education, Greenfield House, Guiting Power, Cheltenham, Gloscester GL545TZ UK. Telephone: 0451–850777.
The purpose of this visual resource package for primary grades, which includes slides and a teacher's guide, is to explore some of the more important reasons why species are disappearing, why people should be concerned, and what can be done about the problem.

Water Precious Water:

A Collection of Elementary Water Activities

Grades 2–6
Activities/Book

AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747–8120
Telephone no.: (209) 255–4094
FAX no.: (209) 255–6396
1 text: $14.95

Biology; Conservation (Environment); Density; Earth science; Elementary school science; Erosion; Evaporation; Physical sciences; Sciences; Volume (Mathematics); Water; Water cycle; Water pollution; Water quality; Water resources; Water treatment.

1988

ENC–000024

Abstract: Activities Integrating Mathematics and Science (AIMS) books primarily integrate mathematics and science, but also provide coordinating activities related to other curriculum areas including language arts, social studies, physical education, art, and music. This book, developed by AIMS with the cooperation of the California Department of Water Resources and input from other water agencies, is designed for grades 2–6. The book includes hands-on activities investigating water conservation and water quality. The book covers the following water topics: water cycle, evaporation, conservation, treatment, quality, absorption and erosion, distribution, and water properties. Each activity generally includes: topic area, introductory statement, key questions, mathematics skills and science processes, materials, background information, management, advanced preparation, procedure, discussion, extensions, curriculum coordinates, and illustrated student worksheets. The mathematics skills and science processes include: distribution of resources, measurement, calibration, volume, surface tension, capillary action, density, succession and evaporation, water cycle, survey, filtration, simulation, conservation, and absorption. (TDB)

Author: Editors: Judith Hillen, Arthur Wiebe, Dave Youngs; writing team: Maureen Allen, Debby Deal, Dorothy Terman, Gale Kahn, Vincent Sipkovich.

Evaluation: Published Reviews:
Deal, Debby. "A Look at Project AIMS." *School Science and Mathematics*. January 1994. Vol. 94, Issue 1, pp. 11–14.

Mizer, Robert, Robert W. Howe, and Patricia Blosser. *Mathematics: Promising and Exemplary Programs in Elementary and Secondary Schools*. Columbus, OH: ERIC Clearinghouse for Science, Mathematics and Environmental Education, 1990. pp. 17–19. ED 335230.

To date, the ENC *Catalog* contains over thirty AIMS titles. Teachers hoping to integrate mathematics and science in their Earth Day celebrations have many choices from AIMS.

Overhead and Underfoot
This AIMS book includes 15 activities designed to engage grades 3–4 students in hands-on activities involving weather, plants, soil, geology, and conservation.

Primariamente Plantas=Primarily plants
This AIMS book contains 26 hands-on activities that cover all of the major K–3 concepts identified in the Biological Science: Plants section of the 1990 California Science Framework. The student worksheets are written in both Spanish and English.

Our Wonderful World: Solutions for Math + Science
Designed for grades 5–9, this AIMS book of environmental activities integrates mathematics skills and science processes while students explore humans' relationships with their natural surroundings. Topic areas include air, water, transpiration, soil, plants, animals, and insects.

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What's Under Your Feet

Activities/Book

United States Geological Survey, Reston-ESIC
507 National Center
Reston, VA 22092
1 text: Free
Note: 3 complimentary copies per customer

Cartography; Climate; Conservation (Environment); Earth science; Erosion; Fossils; Geology; Natural sciences; Sciences; Water resources.

1992

ENC–000225

Abstract: This booklet of ideas, games, and hands-on activities in the earth sciences was produced by the U.S. Department of the Interior and the U.S. Geological Survey to encourage elementary students to develop an understanding of the "world literally under our feet," and to promote stewardship and citizen participation in the care of public lands and natural resources. The 40 pages of activities are divided into seven content areas: 1) "The Earth," including Introduction-View, and Soil & Dirt; 2) "Forces," including Plate Tectonics, Earthquakes, Mountain Building, Erosion, Volcanoes, Glaciers, and River Power; 3) "Measuring," including Natural Layers, Ages & Stages, Measuring Times, Ocean Floor, and Ground Water; 4) "Mapping," including Making Maps, Different Maps, Mapping Game, Geo Jobs, and U.S. Map; 5) "Geology," including Fascinating Finds, Expedition Game, Weather: Outside, Pressure: Inside, Weathering, Minerals, Tools & Tests, and Rock Hounds Game; 6) "From the Ground," including Yesterday's Resources, Today's Products, Precious Stuff, Dinosaurs, World of Fossils, and Making Fossils; and 7) "The World," including World Geography, Curious Page, Rocks in Space, City/Country Geology, Recycling and Pollution, and See in Metrics. Students are provided with the instructions, information, and answers needed to complete each activity, and with thought-provoking questions related to the topic. Eighteen additional reading references are also provided. (WAJ)

Author: Penni Rubin and Eleanora I. Robbins.

Free curriculum materials are available from many sources, including several Federal agencies and State programs. Below is a sampling of the free resources from the ENC *Catalog*. There are other free resources listed within this issue of *Focus* as well.

How Do We Treat Our Wastewater?
Stephen Vandas. EPA Office of Water, Washington, DC (202) 260–2285.
This poster, designed to promote environmental awareness, illustrates what happens to water used in homes, schools, businesses, and industries, and how wastewater is treated before it is reused or returned to the environment. The back of the poster includes information and instructional activities on water use and the treatment of wastewater.

School Recycling Programs: A Handbook for Educators
EPA, RCRA Information Center, Washington, DC (800) 424–9346.
This brochure provides a discussion of the solid waste crisis in American communities, a discussion of the importance and benefits of recycling, a description of four types of school recycling programs, and ten step-by-step instructions that provide general guidelines to get programs started.

Energy
Ohio Academy of Science, Columbus, OH (614) 488–2228.
This book is a resource guide for teachers to help students develop energy research projects. Through these projects, students are exposed to research problems relevant to Ohio's science- and engineering-related industries as they develop their library research skills, particularly in the area of energy research.

Selected Readings for Earth Day Educators

Burgie, Patricia S. "A Kindergartner's Environmental Workweek." *Science and Children*. April 1991, v28 n7, pp. 40–42. Describes ways in which children, their parents, and their communites can become involved in environmental activities, such as recycling, composting, energy conservation, and litter cleanup. Includes student projects.

Chase, Craig C. "A Chronology of Environmental Education: Please Throw Stones at This Author." *Nature Study*. January 1985, v38 n2–3, pp. 21–22, 25. Traces the history of environmental education from the 1860s, when camping for recreation began, to recent environmental developments.

Clearing. March/April 1993, n78. This issue contains several articles on environmental education. Subjects covered include recycling activities for K–12 classrooms, waste reduction programs for schools, and lesson plans for exploring energy conservation.

Dighe, Judith. "Children and the Earth." *Young Children*. March 1993, v48 n3, pp. 58–63. Describes ways to involve young children in early childhood programs in environmental education.

Educational Leadership. April 1993, v50 n7. Earth Day is a focus of this issue, which includes an article about how discussing, researching, and writing about a particular environmental issue can lead to increased student interest and involvement. Another article describes an interdisciplinary unit about a polluted river and a rural Tennessee town, and provides suggestions for structuring such units.

Gertz-Hyman, Teresa. "Messages about Technology in Children's Literature." *New Advocate*. Spring 1993, v6 n2, pp. 123–38. Examines messages about technology in books available to children, including the avoidance of discussion about environmental impacts of technology. Suggests ways to present issues surrounding technology using children's literature.

Grossman, Lois. "Teaching about the Environment in the Foreign Language Classroom." *Foreign Language Annals*. Spring 1993, v26 n1, pp. 87–92. Discusses environmental education in the Spanish-speaking classroom. The approach used incorporates oral proficiency goals, discussion activities, and composition suggestions.

Hoot, James L., and Foster, Margaret L. "Promoting Ecological Responsibility . . . Through the Arts." *Childhood Education*. Spring 1993, v69 n3, pp. 150–55. Shows how the arts can be used to promote environmental awareness, using particular examples of a play and a video produced by elementary school students.

LaRue, James, et. al. "Libraries and the Environment." *Wilson Library Bulletin* . February 1991, v65 n6, pp. 26–43. This issue includes information about recycling projects, recycled paper products, energy efficient libraries, environmental information sources, and library activities for Earth Day.

Raze, Robert E., Jr. "Springtime Science." *Science and Children*. April 1993, v30 n4, pp. 26–27. Combines nature hikes with activities to develop students' awareness of the environment and observation and critical thinking skills.

Sias, Jim. "Packaging for Posterity." *TIES Magazine*. September/October 1990, pp. 33–37. Describes a project in which students design environmentally responsible food packaging.

Smithsonian. April 1990, v21 n1. Special Issue–20th Anniversary Issue on the Environment. Available from the Smithsonian, P.O. Box 55993, Boulder, CO 80322–5593. This special issue includes articles offering a historical perspective on Earth Day, a list of important books on the environment, and an overview of environmental thought in the United States through the first Earth Day in 1970.

Trilogy. Winter 1993, v4 n6. Available from Trilogy Publishing, Inc., 310 Old East Vine St., Lexington, KY 40507. This issue contains several articles about the environment, including one in which alternative forms of transportation are discussed.

Urban Forests. December/January 1993, v12 n6. Available from American Forests, P.O. Box 2000, Washington, DC 20013. Articles in this issue cover trees in the urban and suburban classroom, and the goals of urban forestry.

Weilbacher, Mike. "Earthfest. Activity Book." *Learning*. March 1991, v19 n7, pp. 23–48. Contains posters and information on ecology, animal adaptations, and Earth Day projects and celebrations.

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Earth Day on the Internet

Here are selected Internet resources and how to reach them via the ENC Gopher. Like most sites on the Internet, the ENC Gopher contains several different levels of menus. The paths through the levels are listed for the resources below, with the levels separated by slashes.

There are too many Earth Day online resources to attempt to describe them all—instead, here is a sampling of some of the lesser known projects. Be sure to wander down any "alley" that looks intriguing. Keep in mind that the structure of different Gophers is subject to change at any time; if you can't find these specific resources, you will probably find something just as interesting.

Additional Curriculum Resources/Lessons, Activities, Projects/Science/Wolf Study Project
There is a variety of wolf-related information within this area of the Gopher, from news about wolves to images and sounds of wolves. One specific resource here is the Timber Wolf Study Guide, which is an entire teaching unit on the Eastern Timber Wolf. The unit contains wolf facts and wolf folklore, as well as classroom activities. Many activities are designed to enhance a field trip to a zoo where students can see this type of wolf.

Additional Curriculum Resources/Lessons, Activities, Projects/Interdisciplinary/UCSD Lesson Plans
These lesson plans are quick classroom activities for a wide range of disciplines, from math to physics to lessons in Spanish. The Earth Science folder contains activities about the Earth itself. One Earth Day example is "Acid Rain." Most of the hands-on activities located here use readily available inexpensive materials.

Additional Curriculum Resources/Lessons, Activities, Projects/Interdisciplinary/Classroom Activities and Projects (CICnet)
These are completed or ongoing classroom projects, many of which use the Internet. There are also invitations for classrooms to participate in projects, which cover all age groups and disciplines. The "Earth Day Treasure Hunt" describes one teacher's Earth Day project for her class.

News, Journals and Full Text/Journals and Popular Magazines
This area of the Gopher contains some of the magazines that publish selected portions of their issues online. A relevant Earth Day example is *E: The Environmental Magazine*. From the November/December 1994 issue is an article called "The Kid Heroes Hall of Fame," which describes kid-initiated projects around the country that promote environmental awareness and activism.

Education, Math, Science Internet Sites/Sciences/EcoGopher/Environmental Groups and Programs/National and International Groups
Many environmental groups are described here, including the Sierra Student Coalition, a Sierra Club affiliate for high school students. There is also information from Greenpeace and other organizations.

Education, Math, Science Internet Sites/Sciences/EcoGopher/Library
This area has several types of resources, from activities to organizational contacts and text files. One example within the Civilization category is the Global Cycling Network with information about cycling as an alternative form of transportation and as a recreational activity. There are also data sheets such as "Recycled Paper," which describes the composition of different types of paper.

The EcoGopher also has archives of environmental electronic mailing lists that contain not only discussions, but also information on subscribing to the lists.

Education, Math, Science Internet Sites/Sciences/EE-Link/Environmental Facts & Data/Profiles of Select Threatened & Endangered Animals
The U.S. Fish and Wildlife Service profiles different species of animals that are threatened or endangered. These data sheets give the basic facts on many threatened species, including appearance, habitat, range, and factors that influence the species' threatened status. For example, the Karner Blue Butterfly was profiled in March, 1994. This species is facing habitat loss due to land development and the lack of certain necessary natural phenomena such as wildfires and mammal grazing.

The Environmental Facts & Data file also contains the complete text of the Endangered Species Act of 1973, which could help lend historical perspective to the 25th anniversary of Earth Day.

Education, Math, Science Internet Sites/Sciences/EE-Link/Classroom Resources for Environmental Education
This file provides references to instructional materials and information on how to obtain them. For example, Environmental Education Resources from the Rainforest Action Movement tells how to order the filmstrip and teacher's guide of "The Vanishing Forest—The Crisis of Tropical Deforestation," among other materials. This source also provides the full text of some resources.

Other Federal Projects and Resources

Earth Science Information Centers (ESICs)
Earth Science Information Center
507 National Center
Reston, VA 22092
(703) 648–6045
(800) USA–MAPS
This network of ESICs provides information from USGS about geologic, hydrologic, topographic, and land-use maps; books and reports; aerial, satellite, and radar images and related products; earth science and map data in digital format and related application software; and geodetic data.

Project Water Education for Teachers (WET)
Dennis Nelson, Director, National Project WET
201 Culbertson Hall
Montana State University
Bozeman, MT 59717
(406) 994–5392
WET develops diverse and innovative approaches to a balanced water education program that appeals to a wide spectrum of educators and students. Project WET is producing diverse educational publications, models, and programs.

Project WILD
Betty Olivio, Director
5430 Grosvenor Lane
Bethesda, MD 20814
(301) 493–5447/Fax: (301) 493–5627
Project WILD provides training and curriculum materials for teachers interested in the environmental sciences. The guides contain more than 80 supplementary, interdisciplinary activities for grades K–12.

Research Apprenticeship Program for Students (RAPS)
Steven Shafran, Bureau of Land Management
Denver Federal Building
390 Union, Suite 350
Denver, CO 80025–5698
(303) 969–5698
Selected high school students learn about the management of natural and cultural resources on the Nation's public lands through first-hand work experience. The program operates in the western United States.

Youth Conservation Corps
U.S. Department of the Interior, National Park Service
P.O. Box 37127, Suite 57
Washington, DC 20013–7217
(202) 343–5514
The Youth Conservation Corps is a summer employment program offered by the U.S. Departments of Agriculture and the Interior. Students, ages 15–18, work on projects to further the development and conservation of the Nation's natural resources.

Environmental Education Grants
Environmental Education Division
U.S. Environmental Protection Agency
Attention: Bradley F. Smith
401 M Street SW. (1707)
Washington, DC 20460
(202) 260–4965
The purpose of the Environmental Education Grants Program is to stimulate environmental education by supporting projects to design, demonstrate, or disseminate new practices, methods, or techniques related to environmental education.

Environmental Resource Curricular Program
Ron Slotkin, Program Manager
Office of Science, Planning, and Regulatory Evaluation
U.S. Environmental Protection Agency
401 M Street SW. (H–8105)
Washington, DC 20460
(202) 260–0578/Fax: (202) 260–0036
In the Environmental Resource Curricular Program, EPA, working with educators, sponsors the development of applied, minds-on, integrated teaching tools designed to fit within existing learning objectives. Students conduct the science activities and transform the science activities into action at the community level.

Public Information Centers (PICs)
U.S. Environmental Protection Agency
401 M Street SW. (3404)
Washington, DC 20460
(202) 260–7751/Fax: (202) 260–2080
Public Information Centers provide public access to information selected and maintained by the Federal Government on major ecological and environmental issues. The Centers offer publications, data, interactive computer workstations, theaters, and exhibits, although available services may vary from center to center.

Students Watching Over Our Planet Earth (SWOOPE)
Environmental Education Division
U.S. Environmental Protection Agency
401 M Street SW. (1707)
Washington, DC 20460
(202) 260–8749 or (800) 931–9318/Fax: (202) 260–0790
Students Watching Over Our Planet Earth is a partnership program between EPA and the U.S. Department of Energy. An innovative environmental education system for teachers and students, the program uses hands-on science education techniques to challenge students to take an active role in understanding the dynamics of our planet. It incorporates curriculum, teacher training, real data, and a national database of environmental information.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1995 — 392 - 459/30207

Please Send Me the Following Free ENC Materials:

- ❑ *Regional Guidebook to Excellence,* 1995 edition.
- ❑ *ENC Focus—Equity Issues in Grades 1–6.*
- ❑ Future Issues of *ENC Update.*
- ❑ ENC Online Quick Reference Brochure.
- ❑ ENC Submissions Forms.
- ❑ CD-ROM Request Form.
- ❑ *ENC Focus—Real Data.*

Your Name: _____ (Last) _____ (First) _____ (Middle)

Your Position(s): _____

School or Institution: _____ State: _____

Mailing Address: _____

_____

_____ (City) _____ (State) _____ (ZIP) — _____ (ZIP+4)

Phone: (_____) _____ Fax: (_____) _____

E-mail Address: _____ On What Network or System? _____

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How useful did you find this issue of ENC Focus? ❑ Very useful ❑ Useful ❑ Of little use ❑ Of no use

How did you get this issue of ENC Focus?

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- ❑ I received it from another teacher
- ❑ I received it from an administrator in my building
- ❑ I received it from an administrator in my district
- ❑ I picked it up at a(n) _____ meeting
- ❑ Other: _____

Will you be requesting further information about specific programs listed in this issue or materials to help you better understand the programs outlined in this issue of ENC Focus?

- ❑ Immediately
- ❑ In the next two to three weeks
- ❑ In the next month or two
- ❑ Perhaps in the future
- ❑ Probably will not use any items listed in this issue

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- ❑ White, not of Hispanic origin
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Do you have easy access to a(n): ❑ Macintosh computer ❑ IBM/PC or compatible

Do you have easy access to a computer which: ❑ Has a modem ❑ Has a CD-ROM drive

Do you have easy access to: ❑ The Internet ❑ Other local, State, regional, or commercial networks (Name the other network(s): _____)

How would you describe your computer skills? ❑ High ❑ Medium ❑ Low ❑ None

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For All Educators (please check all that apply):

Years of K–12 teaching experience? _____ Is your institution: ❑ Public ❑ Private

Are you currently:
❑ A classroom teacher ❑ A school department chair ❑ A curriculum specialist
❑ A school administrator ❑ A district administrator ❑ A librarian
❑ A teacher educator ❑ A college faculty member ❑ Other _____

Is your area:
❑ Science education ❑ Mathematics education ❑ Elementary education
❑ Some other area _____

Teachers, please circle those grades which you teach
Administrators, circle those for which you have responsibility K 1 2 3 4 5 6 7 8 9 10 11 12
Teacher educators, circle those for which you prepare teachers

For K–12 Teachers and Administrators:

Your school designation (e.g., Elementary, Middle, High, ...): _____

Would you describe your district as: ❑ Rural ❑ Suburban ❑ Urban

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